Genetic modification of the human genome to resist HIV-1 infection and/or disease progression

Grant Award Details

Genetic modification of the human genome to resist HIV-1 infection and/or disease progression

Grant Type: SEED Grant

Grant Number: RS1-00172

Investigator:

Name:	Irvin Chen
Institution:	University of California, Los Angeles
Type:	PI

Disease Focus: HIV/AIDS, Immune Disease

Human Stem Cell Use: Embryonic Stem Cell

Award Value: $616,800

Status: Closed

Progress Reports

Reporting Period: Year 2

View Report

Grant Application Details

Application Title: Genetic modification of the human genome to resist HIV-1 infection and/or disease progression

Public Abstract:	The proposed studies describe the genetic approaches utilizing human embryonic stem cells to suppress and/or eliminate the expression of the human protein CCR5. CCR5 is found on the surface of white blood cells. HIV-1 attaches to CCR5 and uses CCR5 to enter into its target cells. Our approach is to utilize established as well as new non-established approaches to prevent CCR5 from appearing on the surface of the cells. If CCR5 is not present, HIV-1 cannot infect the cells. Interestingly, this concept has already been proven in nature. Approximately 1% of the Caucasian population is genetically deficient for CCR5 and these individuals are resistant to HIV-1 transmission. Their white blood cells, when placed in culture, also resist HIV-1 infection in the laboratory. As such, we believe that our approach can be used to protect high risk individuals from HIV-1 infection as well as impede or stop progression of disease in those individuals already infected.
Statement of Benefit to California:	According to the Centers for Disease Control, California is second only to New York of individuals living with AIDS. Developing means to stop HIV-1 infection and cure those individuals already infected with HIV-1 is of paramount importance for the state of California.

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